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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/864,278	05/25/2001	Takayoshi Yamazaki	46156	1231

20736 7590 12/11/2003

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EXAMINER	
MARKHAM, WESLEY D	
ART UNIT	**PAPER NUMBER**
1762	

DATE MAILED: 12/11/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/864,278	YAMAZAKI ET AL.	
	Examiner	Art Unit	
	Wesley D Markham	1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 September 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5* is/are pending in the application.

4a) Of the above claim(s) *5* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10-25-01 and 9-25-03* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Response to Amendment

1. Acknowledgement is made of the amendment filed by the applicant on 9/25/2003, in which the specification of the instant application was amended, 2 corrected sheets of drawings were submitted, and Claim 1 was amended. Claims 1 – 5 are currently pending in U.S. Application Serial No. 09/864,278 (with Claim 5 being withdrawn from further consideration pursuant to a restriction requirement), and an Office Action on the merits follows.

Election/Restrictions

2. Applicant's election of Group I, Claims 1 – 4, drawn to a process for producing a weather resistant coating, in the paper filed on 9/25/2003 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Drawings

3. The two (2) sheets of corrected formal drawings filed on 9/25/2003 and containing changes to the titles of Figures 5 and 9 are acknowledged and approved by the examiner. As such, the objections to the drawings set forth in paragraph 8 of the previous Office Action (i.e., the non-final Office Action, paper #6, mailed on 6/27/2003) are withdrawn.

Specification

4. The objection to the specification, set forth in paragraph 9 of the previous Office Action, is withdrawn in light of the applicant's amendment to the specification regarding the trademark ACRIT.

5. The disclosure is objected to because of the following informalities:

   - Page 23, line 10 (as amended): The word "solution" appears to be misspelled "solutin".

Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. The rejection of Claims 1 – 4 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention, set forth in paragraph 12 of the previous Office Action, is withdrawn in light of the applicant's amendment in which independent Claim 1 (from which Claims 2 – 4 depend) was amended to remove the limitation that the film can keep a gloss retention of 80% or more for 1,000 hours or more in an accelerated weathering test by a carbon sunshine weather-o-meter.

8. Claims 1 – 4 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

9. Regarding independent Claim 1 (from which Claims 2 – 4 depend), the claim recites a specific mathematical expression relating "εdc" and "τ", wherein "...τ is the time (hour) of exposure". Since "τ", the time of exposure, is not defined by the claim and appears to be a variable (i.e., not a constant) that can be determined by the purveyor in the art practicing the claimed invention, the mathematical expression involving "τ" recited in Claim 1, and therefore the scope of Claims 1 – 4, depends on an arbitrary choice of exposure time. This renders the scope of Claims 1 – 4 vague and indefinite. Specifically, one skilled in the art would not be reasonably apprised of the scope of Claims 1 – 4 (i.e., would not recognize when he/she would be infringing Claims 1 – 4) because, depending on the value of τ chosen, exactly the same coated film and/or process for producing the coated film could fall within the scope of the applicant's claims in some situations and not fall within the scope of the applicant's claims in other situations (i.e., depending on the use / exposure time of the coated film desired by one skilled in the art).

Claim Observations

10. Regarding amended Claim 1, the examiner notes that it is clear that "the residual group" recited in line 18 of the amended claim refers to the previously recited "functional group of the ultraviolet absorptive compound in the dry coating film".

Claim Rejections - 35 USC § 102

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

12. Claims 1 – 4 are rejected under 35 U.S.C. 102(b) as being anticipated by Yanauchi et al. (EP 0 979 836 A1).

13. Regarding independent Claim 1 (from which Claims 2 – 4 depend), Yanauchi et al. teaches a process for producing a weather resistant coating film (Abstract and paragraph [0038]) by preparing a weather resistant coating material comprising a binder (i.e., the acrylic polyol binder system of Yanauchi et al.) (paragraphs [0024] – [0028], [0032], [0033], [0035], and Example 9) and a curing agent (i.e., the isocyanate system of Yanauchi et al.) (Abstract, paragraphs [0009], [0015] – [0023], and Examples 1 – 8) as main constituents (Example 10 and paragraphs [0050] – [0051], which show the acrylic polyol paint binder system mixed with the isocyanate system) and coating an article to be coated with the coating material, followed by drying (paragraphs [0038], [0050], and [0051]), the process comprising chemically bonding an ultraviolet (UV) absorptive compound to either or both of the binder and the curing agent constituting the coating material (paragraphs [0008], [0009], [0016], [0023], [0028], Examples 1 – 8 (which show a benzotriazole type UV absorptive

compound being chemically bonded to the isocyanate curing agent system), and Example 9 (which shows a polymerizable benzotriazole type UV absorptive compound being copolymerized with acrylates to form the acrylic polyol binder system)), and coating the coating material on the article, followed by drying, so that the thickness of the dry coated film is as desired (i.e., becomes "d") (paragraphs[0038], [0050], and [0051]). Yanauchi et al. does not explicitly teach that the UV absorptive compound has a maximum value of its light absorption spectrum in a wavelength region shorter than 380 nm and has a molecular extinction coefficient at the absorption maximum wavelength of 5,000 to 50,000. However, the benzotriazole type and benzophenone type UV absorptive compounds explicitly taught by Yanauchi et al. (see paragraphs [0016], [0028], and Examples 1 and 9) are identical to the UV absorptive compounds claimed and disclosed by the applicant (see, for example, Claim 4 and page 8, line 11 – page 9, line 10, of the applicant's specification). Since the light absorption spectrum and the molecular extinction coefficient of a UV absorptive compound is simply a function of (i.e., determined by) the structure of the UV absorptive compound, and the UV absorptive compounds taught by Yanauchi et al. are identical to the UV absorptive compounds of the applicant, the UV absorptive compounds of Yanauchi et al. would have inherently had a maximum value of their light absorption spectrum in a wavelength region shorter than 380 nm and molecular extinction coefficients at the absorption maximum wavelength of 5,000 to 50,000, as claimed by the applicant. Further, Yanauchi et al. does not explicitly teach that the coating material is designed such

that, when the coating material is coated on an article and dried, the concentration (mol/L) of the functional group of the UV absorptive compound in the dry coating film satisfies the expression "$\varepsilon dc \geq 129 \cdot \log \tau - 367$", wherein ε is the molecular extinction coefficient of the residual group in the dry film, d is the thickness (cm) of the dry film when in use, and τ is the time (hour) of exposure. However, this limitation is inherently present in Yanauchi et al. For example, τ is the time (hour) of exposure of the coating film, and this exposure time is a variable that is neither limited nor explicitly defined (i.e., as a number or a range) by the claims of the instant application. In other words, τ can be any value selected by the purveyor in the art, depending on the specific application that the purveyor in the art intends to use the coating film for. Since the dry coating film of Yanauchi et al. clearly contains a UV absorptive compound / functional group (i.e., having an extinction coefficient "ε" and a concentration in the film "C") and has a thickness "d", the quantity "εdC" in Yanauchi et al., though not explicitly specified, exists, and a value of "τ" can always be chosen so that the quantity "εdC" (i.e., a positive number) in Yanauchi et al. is greater than or equal to the quantity "$129 \cdot \log \tau - 367$", as recited in the applicant's claims. As an example, since the applicant's claims place no limitation on τ, say that $\tau = 699$. At this chosen exposure time, the quantity "$129 \log \tau - 367$" is equal to zero (0). At this point, the quantity "εdC", which is a positive number and therefore greater than zero, is always greater than the quantity "$129 \log \tau - 367$", and the applicant's claimed mathematical expression is satisfied in every instance (i.e., is inherently satisfied).

14. Yanauchi et al. also teaches all the limitations of Claims 2 – 4 as set forth above in paragraph 13 and below, including a process wherein:

- Claim 2: The binder (i.e., the acrylic polyol system of Yanauchi et al.) to which the UV absorptive compound has been bonded is a resin obtained by copolymerizing a UV absorptive compound having a polymerizable vinyl group with another monomer having a polymerizable vinyl group (paragraphs [0025] – [0028], [0033], and Example 9).
- Claim 3: The curing agent (i.e., the isocyanate system of Yanauchi et al.) to which the UV absorptive compound has been bonded is a curing agent which comprises as an essential constituent an isocyanate compound containing residual isocyanate groups obtained by reacting a UV absorptive compound having an active hydrogen with a part of the isocyanate groups of an isocyanate prepolymer and/or monomer each having at least two free isocyanate groups and further comprises, according to necessity, an isocyanate prepolymer (Abstract, paragraphs [0009] and [0015] – [0023], and Examples 1 – 8).
- Claim 4: The UV absorptive compound is at least one compound selected from the group consisting of benzotriazole type compounds and benzophenone type compounds (paragraphs [0016] and [0028], and Examples 1 – 9).

Double Patenting

15. The double patenting rejection set forth in paragraphs 21 – 23 of the previous Office Action is withdrawn in light of the applicant's **REMARKS** filed on 9/25/2003 in which the applicant stated that Claims 1 – 4 of Application Serial No. 10/173,781 were canceled in a preliminary amendment dated 6/19/2003.

Response to Arguments

16. Applicant's arguments filed on 9/25/2003 have been fully considered but they are not persuasive.

17. Specifically and regarding independent Claim 1, the applicant argues that in the presently claimed invention, the coating material is adjusted so that the concentration of the functional group of the UV-absorptive compound in the dry coating film satisfies the mathematical formula recited in the claim. The applicant then states that, according to the formula, one can determine the necessary and sufficient amount of an ultraviolet absorption compound to give a weather resistance for a given period of time, and the relation between the amount of the UV absorption compound and the weather resistance is not considered in Yanauchi et al.

18. In response, the examiner does not dispute the assertion that Yanauchi et al. does not explicitly teach the mathematical expression relating the quantity "εdC" to the log of the exposure time, τ, recited in independent Claim 1. However, the examiner maintains that such a limitation is inherently present in the disclosure of Yanauchi et al. For example, τ is the time (hour) of exposure of the coating film, and this

exposure time is a variable that is neither limited nor explicitly defined (i.e., as a number or a range) by the claims of the instant application. In other words, τ can be any value selected by the purveyor in the art, depending on the specific application that the purveyor in the art intends to use the coating film for. Since the dry coating film of Yanauchi et al. clearly contains a UV absorptive compound / functional group (i.e., having an extinction coefficient "ε" and a concentration in the film "C") and has a thickness "d", the quantity "εdC" in Yanauchi et al., though not explicitly specified, exists, and a value of "τ" can always be chosen so that the quantity "εdC" (i.e., a positive number) in Yanauchi et al. is greater than or equal to the quantity "$129 \cdot \log \tau - 367$", as recited in the applicant's claims. As an example, since the applicant's claims place no limitation on τ, say that $\tau = 699$. At this chosen exposure time, the quantity "$129 \log \tau - 367$" is equal to zero (0). At this point, the quantity "εdC", which is a positive number and therefore greater than zero, is always greater than the quantity "$129 \log \tau - 367$", and the applicant's claimed mathematical expression is satisfied in every instance (i.e., is inherently satisfied). The applicant's statement that one can determine the necessary and sufficient amount of an ultraviolet absorption compound to give a weather resistance for a given period of time by using the mathematical formula of Claim 1 appears to be true. However, this "determination" step is not currently present in the claims of the instant application. In other words, the claims do not require (1) first choosing a desired exposure time, dry film thickness, and UV-absorptive compound having a given extinction coefficient, (2) plugging the values of the aforementioned variables into the formula of Claim 1 to

determine the appropriate concentration of the UV-absorptive compound, and then (3) preparing a coating material having the aforementioned concentration determined by the formula. The claims simply require that the coating material provides a dry film that satisfies the mathematical formula of Claim 1. Yanauchi et al. prepares such a coating material and forms such a film. Regarding the applicant's statement that the UV-absorption compound, which is generally expensive, can be used with great efficiency because an appropriate amount of the compound to be used can be determined by the formula of Claim 1, the examiner notes that this would only be the case if the formula of Claim 1 was an equality, which it is not. The formula of Claim 1 is an open-ended inequality and therefore encompasses situations in which an extremely large amount (i.e., a high concentration) of UV-absorptive compound is present in the dry coating film. In other words, the mathematical expression recited by the applicant in Claim 1 appears to simply state, albeit in quantitative terms, that, when high gloss retention / weather resistance is desired (i.e., τ is chosen to be relatively large), the concentration of the UV absorptive compound in the film (i.e., c) and/or the film thickness (i.e., d) should also be relatively large (i.e., increased). This theory is well-known in the art of UV protective materials, as evidenced by Moriya et al. (USPN 5,132,164) (Col.4, lines 33 – 42, and Col.5, lines 37 – 59) and Liebler et al. (USPN 4,576,870) (Col.4, lines 19 – 32).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wesley D Markham whose telephone number is (703) 308-7557. The examiner can normally be reached on Monday - Friday, 8:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive Beck can be reached on (703) 308-2333. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9310.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Wesley D Markham
Examiner
Art Unit 1762

WDM

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